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ABSTRACT

This report summarizes the goals, objectives, and activities of a project conducted at Kennedy-King College to provide the time and resources for instructors to develop multi-media curriculum materials for use in biology, psychology, and social science courses. Introductory material outlines project objectives in terms of resource development and student impact. Next, the project is evaluated in relation to its nine objectives: (1) to develop multi-media materials; (2) to obtain the software and equipment necessary for individualized instruction; (3) to develop faculty competencies; (4) to obtain technical personnel; (5) to promote interdisciplinary cooperation; (6) to improve student performance; (7) to increase student interest; (8) to encourage students to major in the sciences; and (9) to improve student course completion rates. This section describes resources and methods used and results attained. Then, conclusions are presented, highlighting the problems and accomplishments of the project, and future activities are projected. Finally, information on budgeting expenditures and modifications is provided. Appendices include external evaluation conclusions, forms for instructor evaluation of materials, lists of videocassettes and films selected for curriculum use, student evaluations of curriculum materials, and estimates of students who used the materials. (HB)

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MINORITY INSTITUTIONS SCIENCE IMPROVEMENT PROGRAM: INDIVIDUAL INSTITUTION

(NSF Award No. SER 78-16446)

SCIENCE FOR THE EIGHTIES

FINAL PROJECT REPORT

U.S. DEPARTMENT OF EDUCATION
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April 28, 1982

JC 830 180

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ABSTRACT

The major purpose of this project was to provide resources and time for the development of multi-media instructional materials to improve science education for Kennedy-King College students, 96 percent of whom are black Americans. Materials were developed specifically for use in selected social science and biology courses. Faculty participants in this project developed and used computer-assisted instruction, videocassettes, and student study guides and selected for purchase commercially prepared videocassettes and films. This project acquired three PLATO terminals, a portable video camera and recorder, a videocassette editor, two TV receivers and two videocassette players, and other equipment for implementing existing multi-media instruction and for developing new multi-media instruction. Meetings and workshops were conducted to develop faculty competencies, and interdepartmental and interdisciplinary cooperation between the Biology Department and the Social Science Department was promoted. A total of 35 biology and social science faculty participated in the project, and most of these faculty have shown interest in continuing to use developed or purchased materials. It is estimated that more than 2,500 students used developed materials. The vast majority of these students indicated positive attitudes towards having used the materials. This project was evaluated by Woltz & Associates, Inc., and found to be successful in carrying out the objectives set forth in the grant proposal.

MINORITY INSTITUTIONS SCIENCE IMPROVEMENT
PROGRAM: INDIVIDUAL INSTITUTION
(NSF AWARD NO. SER 78-16446)

SCIENCE FOR THE EIGHTIES
Final Project Report

I. INTRODUCTION

Funding for this project was awarded to Kennedy-King College through the Minority Institutions Science Improvement Program for 36 months from September 1, 1978, to August 31, 1981. This project received a no-cost extension to continue from September 1, 1981, to February 28, 1982.

As stated in the abstract of the proposal, "the major purpose of this...project is to provide time and resources for the development of multi-media curriculum materials to improve science education for Kennedy-King College students." Materials were to be developed for biology and social science courses. Kennedy-King College, a two-year community college and one of the City Colleges of Chicago, has one of the largest enrollments of black students in the United States. By and large its students lack basic academic skills (e.g., most do not read even at the high school level) and are hampered by socio-economic disadvantages that prevent their success with traditional learning.

Lux Henniger, the proposal's author, served as project director during the first year but resigned from the Kennedy-King College faculty in August 1979. At this time Errol Magidson was named project director. The major activity during Lux Henniger's tenure was a series of planning meetings with interested faculty from biology and social science disciplines. Under Errol Magidson's direction project goals were narrowed into objectives; audiovisual materials were developed; faculty were recruited to either develop, review, or use materials; weekly staff meetings were held; and workshops were conducted.

II. PROJECT OBJECTIVES

The project proposal identified specific science courses for which multi-media materials were to be developed. These courses included Social Science 101, Social Science 102, Psychology 201, Biology 101-111 and Biology 102-112. The goal of the project was to improve science education of students taking these courses. To achieve this goal five resource development objectives were outlined in the proposal (p. 7). The student impact objectives were not enumerated in the proposal but were alluded to in a general way in the text of the proposal. The student impact objectives were regarded as a useful addition to the stated resource development objectives because they listed several of the desired outcomes expected of the students who were using the developed materials in their courses. Because the proposal and the NSF grant did not call for or provide for resources to rigorously measure the student impact objectives and because of the difficulty in carrying out rigorous measures, the data collected and analyzed were descriptive and illustrative.

A. Resource Development Objectives

1. To provide time and resources for instructors to develop multi-media instructional materials for use in biology, psychology, and social science courses.

2. To acquire the necessary equipment and"software" for the implementation of existing multi-media individualized instruction units and the development of additional units.

3. To conduct seminars and workshops for developing faculty competencies in the creation and implementation of individualized instruction, multi-media science and social science learning units.

4. To retain the services of course development personnel who have expertise both in academic subject areas and in multi-media instructional design and to employ the appropriate staff and technical personnel necessary to accomplish the purpose of the project.

5. To promote interdepartmental and interdisciplinary cooperation between the Natural Science and Social Science Departments of Kennedy-King College through the interaction of the Biology Curriculum Committee and the Social Science Curriculum Committee.

B. Student Impact Objectives

6. To improve achievement on specific instruction.

7. To increase interest for science students in the subjects covered.

8. To encourage students to major in the sciences.

9. To improve successful course completion rates of enrolled students.

III. EVALUATION

This presentation of the evaluation of the project is keyed to each objective. In addition to our own continual monitoring and assessment, a performance evaluation was conducted by an external evaluator, Woltz and Associates, Inc., of Wood Dale, Illinois. The principal evaluator was Darrel J. Vorwaller, who has had extensive experience reviewing other government-funded projects in the City Colleges of Chicago such as AIDP and the Disadvantaged Student Grant. This external evaluation was conducted in December 1981. It was developed from interviews with the project staff, the College president, and with participating faculty, and by perusing project files. The external evaluation report was highly favorable. In his letter of December 28 to the project director, Vorwaller wrote:

> We found that the project was essentially a well managed enterprise, used as a vehicle for enriching the availability of audiovisual media for use in classroom teaching. Materials produced were of a commendable quality. Faculty support and intention to use the materials further was expressed by those interviewed.

A copy of this letter and the conclusions of this external evaluation report are provided in Appendix A and Appendix B.

A. Objectives

Objective 1: Development of multi-media materials

"To provide time and resources for instructors to develop multi-media instructional materials for use in biology, psychology and social science courses."

Faculty Time

The project staff consisted of several faculty members: a director, a biology faculty coordinator, a social science faculty coordinator, and a multi-media specialist. Each faculty member received replacement time as follows:

Name	Department	Staff Title	Involvement Time
Lux Henniger, Professor	Social Science	Project Director	9/78 to 8/79
Errol Magidson, Associate Professor	Social Science	Project Director	9/79 to 2/82
Margaret Balsley, Instructor	Social Science	Social Science Coordinator	9/79 to 12/81
A. B. Cain, Assistant Professor	Biology	Biology Coordinator	9/79 to 12/79
Alicia Hernandez, Professor	Biology	Biology Coordinator	1/80 to 5/81
Winslow Jeffries, Instructor	Radio & TV	Multi-Media Specialist	6/80 to 12/81

The involvement of staff occurred principally during the regular fall and spring semesters. Each of these involvements was on a quarter-time basis, representing about six hours per week for 17 weeks each semester.

Given the broad scope of this project, it may have been more appropriate to have the faculty staff work on a half-time or three-quarter-time basis.

Part-time summer assignments were given each summer as follows: Lux Henniger and Errol Magidson (as a faculty coordinator) received part-time assignments during the eight-week summer session of 1979. During the 1980 and 1981 summer sessions, Errol Magidson, Margaret Balsley, and Winslow Jeffries received part-time assignments (half-time during the 1980 summer session and three-quarter time during the 1981 summer session).

A total of 35 biology and social science faculty participated in the project, including 15 biology faculty and 20 social science faculty. Most of these faculty either used developed materials or helped evaluate commercially prepared films and videotapes. The efforts of project staff could have been greatly en-

hanced had more faculty developed materials. Materials were produced primarily by the project staff. Faculty were involved in producing and evaluating materials (either videotapes or handouts for instructors and students), using materials in classroom instruction, attending script-writing and video production workshops, and evaluating commercially prepared films and videotapes for possible purchase. Tables I and II, showing faculty participation, are presented below:

TABLE I. NSF Project Participation by Biology Faculty

Name	Produced Material		Used Material	Attended Meeting or Workshop	Evaluated Commercial Film or VC
	VC	Handout			
Ambuel	✓		✓	✓	✓
Bien-Aime			✓		✓
Cain		✓	✓	✓	✓
Caldwell			✓	✓	✓
Chandran			✓	✓	✓
Crockett, Rich			✓		✓
Crockett, Ron			✓		✓
Daugherty			✓		✓
Goldman			✓	✓	✓
Hernandez		✓	✓	✓	✓
Ingersol			✓		✓
Kyle					✓
Pearson					✓
Pierce			✓		✓
Porch	✓			✓	✓

TABLE II. NSF Project Participation by Social Science Faculty

	Produced Material VC	Produced Material Handout	Used Material	Attended Meeting or Workshop	Evaluated Commercial Film or VC
Balsley	✓	✓	✓	✓	✓
Dye					✓
Gnatz			✓	✓	✓
Goon				✓	
Gordon			✓	✓	
Hahn				✓	✓
Hoberg					✓
Jefferson					✓
Lang			✓		✓
MacDonald			✓	✓	✓
Magidson	✓	✓	✓	✓	✓
Metcalf				✓	
Peretti					✓
Reiter			✓		✓
Schwartz			✓		✓
Shapiro				✓	
Soloff			✓	✓	✓
Solomon			✓		✓
Turner			✓		✓
Sreniawski			✓		

The project staff devised and used an "Instructor Evaluation of NSF Materials" to help in the development process. A copy of this form can be found in Appendix C.

Resources: Equipment and Software

Equipment and software were purchased to meet the needs of the project. Such equipment, their intended use, and the term they were received are indicated below in Table III:

TABLE III. Equipment and Software Purchased

Equipment/Software	Quantity	Intended Use	Term received
PLATO terminals (including keysets; touch panels, & multiplexer)	3	Computer-assisted instruction	Spring 1980
Microtome & accessories	1	production of biological slides; demonstration	Spring 1980
Videocassettes (3/4" format)	89	videocassette production & duplication	Summer 1980 & 1981; Fall 1981
Videocassette players, TV receivers, stands	2	viewing produced & commercially prepared videocassettes	Summer 1981
Color video camera	1	videocassette production	Summer 1981
Editor with dissolve and fast forward (3/4" format)	1	"	"
Portable recorder (3/4" format)	1	"	"
Tripod	1	"	"
Portable lighting	1	"	"
Adapter, battery charger	1	"	"

Kennedy-King College provided TV studio facilities including use of studio video cameras and video recorders. The Resource-Skills Center was available for the use of 25 PLATO terminals

including the 3 provided by the project. Additionally, students were able to use any of the 22 available TV receivers to view videocassettes, and instructors could check out films for which student handouts were prepared.

The delay in the purchase of the equipment was due primarily to the delay in starting the project. Regarding the long delay in the purchase of videocassette equipment, the Central Administration of the City Colleges of Chicago wanted to be certain that the equipment was necessary.

Resources: Materials Developed/Acquired

For the targeted social science courses, nine student study guides, five instructor guides, three videocassettes, and seven PLATO lessons were completed. For the targeted biology courses, 11 student study guides, two instructor guides, and three videocassettes were prepared. The titles of these materials are given below in Tables IV and V.

TABLE IV. NSF Materials Developed for Social Science Courses

Student Handouts

1. "The Ascent of Man, Part 1" (101)
2. "Family of Man: Married Life" (101)
3. "Invitation to Social Psychology" (101, Psych. 201)
4. "Mother Love" (101, Psych. 201)
5. "Productivity and the Self-fulfilling Prophecy" (Psych. 201)
6. "Heredity and Human Development" (101, Psych. 201)
7. "The Experiment: A Data Collection Method" (101, Psych. 201)
8. "Ethnocentrism" (101)
9. "Basic Statistics for Social Science Students" (101, Psych. 201)

Videocassettes prepared for Social Science

1. "The Experiment: A Data Collection Method" (101, Psych. 201)
2. "Ethnocentrism" (101)
3. "Heredity and Human Development" (101, Psych. 201)

PLATO lessons

"Introduction to Elementary Statistics for Social Science Students"

1. Lesson 1: Measures of Central Tendency
2. Lesson 2: Measures of Variability
3. Lesson 3: Significance and Correlations
4. "The Problem Solving Process" (101)
5. "Maslow's Hierarchy of Human Needs"
6. Lesson 6: Introduction to Graphing (101)
7. How to Improve Reading, Parts 1 & 2 (using Mill's "On Liberty") (102)

TABLE V. NSF Materials Developed for Biology Courses

Student Handouts

1. "The Ascent of Man, Part 1" (videocassette used in 102/112)
2. "Man the Creator" (film on genetics used in 102/112)
3. "Introduction to Chimpanzee Behavior" (film used in 102/112)
4. "Soils" (videocassette by Louise Ambuel, used in 102/112)
5. "Human Gastric Function" (film used in 101/111)
6. "Cell Structure and Function" (film used in 101)
7. "Chemical Bonds and Atomic Structure" (film used in 101/111)
8. "The Life and Death of a Cell" (film used in 101/111)
9. "The Living Cell" (film used in 101/111)
10. "The Nature of Life: Cells, Tissues and Organs" (film used in 101/111)
11. "The Blood" (film used in 101/111)

Videocassettes

1. "Soils"
2. "Heredity and Human Development"
3. "Use of the Microtome" (being edited)

The external evaluation report prepared by Woltz & Associates, Inc., indicated that faculty were pleased with the developed study guides:

> All faculty interviewed were enthusiastic about the tailored study guides that had been developed for films and videocassettes commenting that they were definitely useful in improving the learning process in relation to viewing films. (p. 9)

The external evaluation report also indicated the following favorable impression by participating faculty:

> Several of the faculty interviewed said that they had changed their teaching approaches as a result of the project. Some faculty were initially concerned about the passivity of film viewing as influenced by television. They confided that the project gave them an opportunity to address this issue and identify approaches for motivating students to engage actively with the substance and to derive something from it. (p. 9)

Activities during the approved extension of the project included previewing, rating, ranking, and selecting for purchase commercially prepared videocassettes and films. The biology faculty and the social science faculty set up separate curriculum evaluation groups. Eddie Ingersol coordinated the Biology Faculty Curriculum Committee and Errol Magidson and Margaret Baisley coordinated the Social Science Faculty Curriculum Committee. Nearly 100 videocassettes and films were reviewed and about 30 were selected for purchase. A list of final selections appear in Appendix D and in Appendix E. Four social science instructors and two biology instructors who had not participated in any other phase of the project helped in this selection process. A total of 30 biology and social science faculty participated in this evaluation.

Videocassette format was preferred over film format because videocassettes can be viewed individually by students in the Resource-Skills Center while such provision is not accorded film viewing.

By the end of the project only a few of the purchased videocassettes and films had arrived. Faculty will be asked to develop student handouts for these materials.

Objective 2: Development of Individualized Instruction

"To acquire the necessary equipment and 'software' for the implementation of existing multi-media individualized instruction units and the development of additional units."

Equipment and "Software" Acquired

The equipment that was specifically to be used in the development of individualized instruciton consisted of the three PLATO terminals and peripheral equipment including touch panels and a multiplexer. This equipment allowed for the development of computer-assisted instruction using the TUTOR programming language. These terminals were connected to the University of Illinois PLATO system, a network of terminals at over 100 institutions utilizing a computer housed at the Urbana campus. The terminals were housed in the Resource-Skills Center of Kennedy-King College together with the other PLATO terminals. Individualized instruction developed for the PLATO system could be tailormade to suit the needs of individual students by allowing for self-pacing, requiring mastery, using positive reinforcement, providing immediate feedback, and giving remedial help when needed.

The PLATO computer was used to monitor terminal usage during the three semesters prior to the extension of the project. This information was used to determine to what extent the NSF-supported terminals were being utilized in comparison to the usage of the other terminals at Kennedy-King. Excluding terminal down-time, the PLATO terminals were generally available a total of 54 hours per week. The data showed peak usage in two months each semester during February and March of the Spring Semesters of 1980 and 1981 and during September and October of the Fall Semester 1980. AA comparison of these peak months shows a steady increase in average weekly usage. By the Spring Semester 1981 the NSF-supported terminals were being utilized more than the average weekly usage of the other terminals during the two months of peak usage. This was the case despite the fact that these three terminals were located in the last row of terminals (about 4 terminals per row). Table VI below summarizes terminal usage during the Fall 1980 and Spring 1981 Semesters:

TABLE VI. NSF/PLATO Terminal Usage (expressed in average hours per week per terminal)

Terminal	Fall Semester 1980					Spring Semester 1981				
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
25-16	3.5	21.4	35.2	19.1	17.2	17.0	34.1	32.3	29.8	12.6
25-17	2.3	24.9	31.0	16.4	13.1	12.9	30.5	31.6	22.1	11.4
25-18	2.5	24.1	35.2	19.6	19.2	14.5	35.5	34.5	26.6	12.9
total for Kennedy-King site (all terminals)	11.2	32.2	36.3	24.1	22.0	20.9	31.0	33.0	28.8	18.9

Because the videocassettes can be viewed by students individually, as well as by class, the videocassettes offer an elementary form of individualized instruction; however, only the PLATO lessons are noted under this section as individualized instruction.

Implementation and Development of Instructional Units

The three PLATO terminals acquired with project funds were placed alongside the other PLATO terminals in the Resource-Skills Center. The project staff arranged a priority usage schedule with the PLATO staff so that faculty participants would have priority to develop PLATO lessons at these terminals or to permit their students to use these terminals even if a class other than social science or biology were scheduled to use the other PLATO terminals. The newly acquired PLATO terminals made it easier for large social science or biology classes to use PLATO. Because there existed a great many biology PLATO lessons, the project staff sought to concentrate on lessons appropriate for social science courses.

Several social science lessons were either newly written or revised and programmed onto PLATO:

1. Elementary Statistics for Social Science Students: Descriptive Statistics (Measures of Central Tendency) (for Social Science 101 or Psychology 201)
2. Elementary Statistics for Social Science Students: Descriptive Statistics (Measures of Variability) (for Social Science 101 or Psychology 201)

3. Statistics and Significance (for Social Science 101 or Psychology 201)
4. The Problem Solving Process (completely revised) (for Social Science 101)
5. Maslow's Hierarchy of Human Needs (for Social Science 101 or Psychology 201)
6. Introduction to Graphing in the Social Sciences (completely revised) (for Social Science 101)
7. How to Improve Reading, using John Stuart Mill's "On Liberty" (revised) (for Social Science 102)

The project proposal called for a multi-media specialist to program PLATO lessons and to edit videocassettes. The project had to hire programmers on a part-time basis because no person could be found with such diverse credentials.

R. A. Avner, assistant director of the Computer-based Education Research Laboratory at the University of Illinois and a PLATO expert, served as a consultant. He reviewed the first five listed PLATO lessons for content and pedagogical style. He wrote in his "Evaluation Overview of Proposal 'Science for the Eighties'" that "the pedagogical style is very good and should be appropriate to the efforts described in the general proposal" (p. 3). Minor problems he noted were corrected.

The development of successful PLATO programs is a long, difficult task involving script preparation, programming, developmental testing, and revision. It is estimated that more than 100 hours were required to develop each of the PLATO lessons.

Student usage of all the lessons except the one on John Stuart Mill was kept. We are pleased to note that this usage includes data on usage at other institutions (431 hours or 16%). Total usage is listed in Table VII as follows:

TABLE VII. Student Usage of PLATO lessons (until June 1981)

Lesson	% Use On K.K. Campus	%Use In Other Institutions	Total Hours N = 100%
SS Statistics 1	92%	8%	895
SS Statistics 2	75	25	138
SS Statistics 3	92	8	378
Maslow's Needs	93	7	228
Problem Solving	68	32	855
SS Graphing	95	5	165
Total	84%	16%	2659

Objective 3: Development of Faculty Competencies

"To conduct seminars and workshops for developing faculty competencies in the creation and implementation of individualized instruction, multi-media science and social science learning units."

The initial seminar to provide an orientation to interested biology and social science faculty was held on October 25, 1979. A description of the project was given including its history, goals,and strategies for achieving the goals. Faculty were given information on how they might participate, such as by suggesting materials to be developed, developing materials, or helping evaluate materials. Participants were given the opportunity to view PLATO lessons that were under development. Topics usually presented in particular targeted courses were discussed. Including two staff members, only 10 faculty members out of approximately 40 attended this seminar.

A full-scale series of videocassette development workshops emphasizing script writing was conducted during the Spring Semester 1980 by Chris Dimas, then director of the Faculty-Staff Center of the City Colleges of Chicago. Each of these workshops normally was held for two hours at a time when nearly all instructors would not have classes (February 21, March 4, March 25, and April 22.) Topics included in this series of workshops included using camera shots; viewing sample videocassettes; brainstorming topics; writing a scenario and content outline; reading sample scripts; and preparing, evaluating and revising scripts. These workshops were fairly well attended considering the fact that the project had not yet acquired its own equipment. The Resource Skills Center provided a videocassette player and TV receiver as needed. Attendance was as follows:

February 21, 1980:	9 biology faculty	4 social science faculty
March 4 :	3 biology faculty,	4 social science faculty
March 25 :	9 biology faculty,	4 social science faculty
April 22 :	3 biology faculty,	4 social science faculty

Six scripts were developed from this process. Three of these, including "The Experiment: A Data Collection Method," "Ethnocentrism," and "Soils" were produced as videocassettes.

During the Fall Semester 1980, a workshop was held on October 7 to demonstrate the produced videocassettes and to introduce faculty to Winslow Jeffries, the media specialist hired at the beginning of the Summer Session of 1980. Only five faculty from biology and social science departments attended.

Three video equipment workshops were held during the Fall Semester 1981 to give interested biology and social science faculty an opportunity to tour the College TV studio and control room, view a production in session, and use the remote video camera and portable recorder. Demonstrations and hands-on-experience were provided each participant. Attendance at the November 12 workshop included three biology faculty and two social science faculty. Attendance at the November 17 workshop included four biology faculty. Another workshop was planned to cover videocassette editing but due to equipment problems it had to be cancelled twice.

The seminar and workshops were helpful in encouraging faculty to participate in the project. Several PLATO lessons and videocassettes were either developed or used by faculty as a result of the seminar and workshops.

Objective 4: Technical Personnel

"To retain the services of course development personnel who have expertise both in academic subject areas and in multi-media instructional design; and to employ the appropriate staff and technical personnel necessary to accomplish the purpose of the project."

This objective is partially discussed under Objectives 1 and 3. Consultant R. A. Avner provided assistance in evaluating PLATO lessons. Consultant Chris Dimas provided assistance in video script writing. Bob Carolan, executive producer of video productions for the Center for Open Learning of the City Colleges of Chicago, and Winslow Jeffries made suggestions regarding the specific video equipment the project should purchase. Winslow Jeffries served as video media specialist for the project and was on staff from June 1980. The project director had eight years of experience developing PLATO lessons prior to becoming director and took an in-service course on developing videocassettes near the beginning of his tenure as director.

Because of the difficulty in locating a multi-media specialist with expertise in both computer programming and videotaping, the project obtained the services of part-time PLATO programmers, and subsequently a full-time videotape specialist.

Objective 5: Providing Interdisciplinary Cooperation

"To provide interdepartmental and interdisciplinary cooperation between the Natural Science and Social Science Departments of Kennedy-King College through the interaction of the Biology Curriculum Committee and Social Science Curriculum Committee."

Under Lux Henniger's tenure as project director, interdepartmental meetings were held to discuss topics and procedures for instructional development. Under Errol Magidson's tenure as project director, social science and biology coordinators were appointed and received 1/4-time assignments. Project staff meetings were held on a weekly basis.

During the 1979-80 academic year the project staff decided to work closely together at developing complementary handouts to accompany films and videocassettes that were previewed and judged effective for teaching appropriate topics. For the most part instructor and student study guides followed an agreed-upon format. At this time the project staff decided to use a videocassette on "The Ascent of Man, Part I" to develop accompanying study guides. These were written from two perspectives, a biological one and a social science one. The topic of the presentation, human evolution, was one appropriate for discussion in both Social Science 101 and in Biology 102/112. Staff meetings were used in part to critically review drafts of the study guides.

The seminar and workshops noted under Objective 3 encouraged faculty participation and provided training to both social science and biology faculty. At the workshops all participants were encouraged to offer their academic expertise in preparing and reviewing study guides, video scripts, and PLATO lessons. Faculty participants served as content and technical consultants in the development process regardless of their academic discipline.

The development of the videocassette on "Heredity and Human Development" was an interdepartmental effort from beginning to end. This topic was identified at a staff meeting to which interested biology and social science faculty were invited. A memorandum was sent to all faculty requesting their participation in this endeavor. Several faculty from each department critiqued the script written by the project director. The script was revised several times to meet the satisfaction of the consulting faculty. Talent for the production included two social science instructors and three biology instructors. The script was written during the Spring Semester 1981 and completed by the Fall Semester 1981. It is being used by both social science and biology students. Ewen Akin, president of Kennedy-King College, was so impressed by the edited production that he showed it to Hymen Chausow, Senior Vice Chancellor for Faculty and Instruciton of the City Colleges of Chicago.

In the Fall Semester 1981, part of the extension period, faculty of each discipline suggested and evaluated commercially produced videocassettes and films as noted under Objective 1.

A total of 35 faculty participated in one or more phases of the project, including 20 social science faculty and 15 biology faculty.

Objective 6: Improving Student Performance

"To improve achievement on specific instruction." (Eighty percent of those students who entered a lesson would achieve a score of 75 percent or above on the quizzes.)

This student impact objective measured student performance on specific PLATO lessons. These lessons generally supplemented classroom instruction and were completed as homework. Quizzes were given by PLATO. Students could take an alternate form of a quiz if they wanted to improve their score. The PLATO computer monitored student performance. The results of the 1980 and 1981 Spring Semesters were as follows:

Semester	Classes	Student Entries	Score Above 74%	Percent
Spring 1980	7	460	370	80%
Spring 1981	8	415	325	78%

If we examine the data by classes, in Spring 1980 three classes did not achieve the objective. In Spring 1981, four classes did not achieve the objective; in these classes 70% of the students achieved the objective. The key element in whether or not sudents successfully complete the PLATO lessons appears to be to what extent the instructor encourages the students to complete the lessons. In those classes where the instructor indicated to the students that they would receive a grade (either worth 1/2 of a test score or the same as a test score) based upon their efforts, the quiz results were superior to the performance of students in the other classes.

The impact on overall classroom achievement was not measured because it was not required nor were the resources available.

Objective 7: Increasing Student Interest

"To increase interest for science students in the subjects covered." (At least 75% of the students who had used most of the materials would indicate positive attitudes towards the instruction and less than 25% would indicate negative attitudes as measured on an attitudinal questionnaire.)

The project staff developed a 15-item questionnaire (see Appendix F) to evaluate the attitudes students developed towards the developed instruction as a result of having used the materials. A five point Likert scale was used to show just how strongly students agreed or disagreed with such statements as "I enjoyed using PLATO," "The handout questions were too hard," "The material presented would have been more helpful if given only by

lecture," and "PLATO was nothing but a baby-sitter for the teacher." Two open-ended questions asking what the students had liked most and disliked most were also included on the questionnaire. The questionnaires were administered to students by their instructors towards the end of each semester.

The data showed that the vast majority of social science students enjoyed using PLATO, that they enjoyed it because it let them take part at each step in the lesson, and that it gave them more responsibility for their own learning. Very few students indicated that the material would have been more helpful if given only by lecture. Because no NSF-supported PLATO lessons were prepared for biology students, they did not answer this section of the questionnaire. Both social science and biology students agreed that the other materials were enjoyable and helpful.

The degree of satisfaction as shown by the data is summarized for two semesters in Tables VIII, IX and X. The detailed compilation of the data is available in Appendix G and Appendix H.

TABLE VIII. Satisfaction/Evaluation Responses by Social Science Students

Questions Regarding PLATO		Spring 1980 (N = 180)	Spring 1981 (N = 112)
1. I enjoyed using PLATO	agree	94%	96%
2. I like PLATO because it lets you take part at each step in the lesson	agree	95	94
3. PLATO was nothing but a babysitter for the teacher	disagree	79	77
4. The PLATO lessons were too hard	disagree	85	87
5. PLATO allowed me to take more responsibility for my own learning	agree	89	84
6. The material presented would have been more helpful if given only by lecture	disagree	70[a]	64[a]

[a] See footnote "a" on p. 19.

Questions Regarding Other Materials		Spring 1980 (N = 180)	Spring 1981 (N = 139)
1. Enjoyed presentation	agree	86%	92%
2. A babysitter	disagree	76	83
3. Presentations too hard	disagree	81	80
4. Handouts helpful	agree	89	93
5. Handouts too hard	agree	79	82
6. Lecture would be better	disagree	70[b]	62[b]

[a] 19% of the Spring 1980 respondents and 21.6% of the Spring 1981 respondents indicated "no opinion" on this question regarding PLATO so that only 8% of the 1980 respondents and only 14% of the 1981 respondents agreed with this statement.

[b] 14% of the Spring 1980 respondents and 22% of the Spring 1981 respondents indicated "no opinion" on this question regarding the materials other than PLATO so that only 13% of the 1980 respondents and only 16% of the 1981 respondents agreed with this statement.

TABLE IX. Satisfaction/Evaluation Responses by Biology 101/111 Students

Question		Spring 1980 (N = 59)	Spring 1981 (N = 55)
1. Enjoyed presentation	agree	81%	76%
2. A babysitter	disagree	70	75
3. Presentations too hard	disagree	65*	75
4. Handouts helpful	agree	77	80
5. Handouts too hard	disagree	55*	69*
6. Lecture would be better	disagree	65*	54*

* In all cases where less than 75% of the respondents indicated satisfaction, the number of those indicating "no opinion" was relatively high and in no case did more than 15% of the respondents indicate dissatisfaction.

TABLE X. Satisfaction/Evaluation Responses by Biology 102/112 Students

Question		Spring 1980 (N = 136)	Spring 1981 (N = 46)
1. Enjoyed presentation	agree	86%	82%
2. A babysitter	disagree	65	75
3. Presentations too hard	disagree	74	76
4. Handouts helpful	agree	86	81
5. Handouts too hard	disagree	68*	69*
6. Lecture would be better	disagree	62*	61*

* In all cases where less than 75% of the respondents indicated satisfaction, the number of those indicating "no opinion" was relatively high and in no case did more than 20% of the respondents indicate dissatisfaction.

Student comments to the open-ended questions regarding what they liked most about the materials and what they disliked most about the materials also revealed primarily favorable attitudes towards the instruction. Concerning the open-ended remarks made by social science students in the spring 1980 questionnaire, Margaret Balsley noted the following in her "Annual Report":

> Comments from the students regarding their likes and dislikes of the visual presentations provide better insight. The films themselves were generally liked because they expanded concepts, provided information, made the concepts more realistic, and supplemented input from the teacher. The handouts were liked because they reinforced the main points in the film; they made studying for tests easier; they provided information about what the instructor thought was important. The major dislikes included 1) presentations were too fast; 2) not enough time, 3) audio was unclear.

Typical favorable comments by the biology respondents to the Spring 1980 survey included: "liked everything"(16); "appreciated

being able to view the videocassettes more than one time;" and "the materials provided for more awareness and discussion." Five students indicated that they did not like any of the materials.

Comments made by the respondents to the Spring 1981 survey were similarly favorable. For example, biology students indicated that the materials were "valuable," that they "enjoyed them," that they made the lectures "easier to understand;" they also reported that the films were often "too fast to take notes." In order to meet the difficulty of having all students answer all the questions on a study guide, project staff recommended placing students into study groups so that each student would be responsible for answering about three assigned questions.

Woltz & Associates, Inc., evaluated the results of this objective as follows:

> The affirmative and supportive responses are obviously in a very high range, which is useful feedback for further developing the materials. The same questions were asked of students regarding film and videocassettes with similar results. Data on these evaluations will not be presented here in the interest of time and space. The project staff did a commendable job in obtaining and evaluating the data. The high level of student satisfaction and enthusiasm certainly provides a measure of confidence in continued use of audio, visual and technical media to support classroom teaching. (p.14)

Objective 8: Encouraging Student Majors

"To encourage students to major in the sciences."

This objective was measured only by a single question on the questionnaire which asked students, "From having taken this class I am more interested in a science career (e.g., biologist, psychologist, lab technician, nurse, etc.)." The specific objective was to have at least 10% of the student respondents "strongly agree." The data are shown in Table XI below:

TABLE XI: Responses to question, "From having taken this class I am more interested in a science career (e.g., biologist, psychologist, lab technician, nurse, etc.)"

Spring 1980 Group	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
Social Science (N = 180)	20%	27%	31%	17%	6%
Biology 101/111 (N = 59)	26%	14%	40%	20%	0%
Biology 102/112 (N = 46)	11.5%	23%	38.1%	18.6%	8.8%
Spring 1981 Group					
Social Science (N = 61)	13.1%	19.7%	32.8%	24.6%	9.8%
Biology 101/111 (N = 55)	27%	23%	29%	18%	3%
Biology 102/112 (N = 46)	17%	26%	19%	22%	16%

Although the data satisfy the objective, the results must be treated cautiously and tentatively. Certainly it would have been more appropriate to take before and after measures and to have examined the registration records of students to determine whether or not they had already indicated a preference for a science career before having taken the NSF class and whether or not they indicated such a preference after having taken the NSF class. Obtaining such information was beyond the scope of this project and would have required more time and resources. Also, since many community college students do not complete their programs, it would have been very difficult to do a follow-up study.

Objective 9: Improving Student Course Completion

"To improve successful course completion rates of enrolled students."

For this objective, project staff looked at the data of 3 Social Science 101 classes taught by one instructor which used nearly all the NSF materials (4 PLATO lessons, 1 videocassette, and 3 films) and compared the results of the Spring Semester 1980 with that of the Fall Semester 1978 and the Spring Semester 1979. The Fall Semester 1979 data were not used because some of the materials were used then. We imposed the most stringent criteria for determining retention rate: 1) all students who were given "Z" grades at midterm ("Z" = did not pursue course objectives) were deemed dropouts; 2) all withdrawals ("W" or "ADW") were considered dropouts; and 3) all students who received an "F" as the final grade were considered dropouts. "No shows" (those who missed the first two class sessions) were excluded from the data.

The retention rate for the 3 Social Science 101 classes which used nearly all the NSF materials was 64% in the Spring Semester 1980. This showed a marked improvement on the semesters during which the NSF materials had not been used by this instructor (45% in fall 1978 and 37% in spring 1979.)

The data was then compared to a random sample of Social Science 101 classes offered during the Spring Semester 1980. The retention rate for the random sample was only 46% compared to the 64% in the NSF group. The data clearly suggest that improved course completion rates of enrolled students does occur when most of the materials are used.

During the Spring Semester 1981, the successful completion rate of students enrolled in the three classes where nearly all the NSF materials were used and required was 62%. Unfortunately, no comparison in terms of relative success of students enrolled in NSF classes with the department as a whole was made because some of the data could not be obtained. Of course, the average successful completion rate of the Spring Semester 1981 was nearly the same as for that obtained for the Spring Semester 1980 (64%), both being substantially higher than for the average rate obtained during the Fall Semester 1978 and the Spring Semester 1979.

The data must be regarded cautiously because only one instructor had used nearly all the materials with his students. There are too many other uncontrolled variables that could account for the differences.

B. Project Management

The external evaluation conducted by Woltz & Associates, Inc., assessed the contribution made by project staff towards satisfying the goals of the project. This evaluation is as follows:

> As part of this review, we evaluated general project management to determine the extent to which management contributed to the accomplishment of project objectives. We reviewed financial records, project records, progress reports and interviewed project staff regarding management. As criteria, we assessed the extent to which the project plan was used to provide direction and control; whether appropriate staff were assigned to the project; whether staff understood project objectives and their responsibilities in carrying out objectives; how effectively project activities were coordinated; whether there was an ongoing evaluation fed into the management process; and whether appropriate controls were provided for the project finances. We were satisfied in all areas that sound and consistent management had been provided. Faculty staff reflected an awareness of their assignment and sense of responsibility for achieving objectives. The City Colleges of Chicago central office provides financial management reports for information and use by project management. Although current report formats are cumbersome, they do have the detail needed for managing finances. The project director indicated that he reviewed financial reports carefully for errors and used them as a tool for pacing project activity. When errors occurred, he arranged to have them corrected. We concluded that project management was reliable and sound, and was an important factor in the successful completion of the project. (p. 16)

IV. CONCLUSIONS

Most projects face difficulties in fulfilling their objectives. This project was no exception. Fortunately, none of the problems was serious enough to impair the effectiveness of this project. The following is a list of difficulties this project had to surmount:

A. Problems

1. The original project director, who also authored the grant proposal, was not available to interpret the

grant proposal. His resignation and sudden departure were unanticipated. The project objectives outlined in the grant proposal were often ambiguous, and the proposal narrative contained additional objectives. The newly appointed director received advice on interpreting the proposal from consultant R. A. Avner, who has had much experience in grant proposal evaluation.

2. The project proposal called for only quarter-time assignments of project staff, which was insufficient. The project staff spent many more hours than this compensation provided.

3. The project proposal called for the hiring of a faculty member to serve as multi-media specialist who could program PLATO lessons and produce and edit video presentations. Such personnel are not to be found. Fortunately, the project was able to hire part-time PLATO programmers and to hire a video specialist.

4. Obtaining faculty participation in preparing materials was nearly impossible. Project staff had to initially prepare most of the materials. Faculty participation was almost entirely in the form of workshop attendance, material review, and material usage with students.

5. There was a long delay in the acquisition of the video equipment primarily because the Central Administration of the City Colleges of Chicago wanted to be certain such equipment was necessary. The acquisition delay was also due to the cost-effective process of closed bidding by potential vendors.

6. There were many errors in the regularly updated budgetary information sent by the Central Administration of the City Colleges of Chicago due mostly to computer program problems and to mistakes in expenditures for personnel in another NSF project. The project director spent many hours identifying and correcting errors in computer printouts on the budget.

B. Accomplishments

The conclusions given in the performance review conducted by Woltz & Associates, Inc., are presented below as project accomplishments:

1. The multi-media teaching aids promised in this project were developed including acquisition of PLATO, video production and showing equipment; development of videocassettes; development of student teaching guides; and acquisition of commercial films and videocassettes. The quality of the materials produced was commendable.

2. Workshops and seminars were conducted to develop faculty competency in PLATO lesson writing, video script writing, video production and use of media in the classroom. Faculty indicated their intentions to continue to use media materials to enrich their classroom teaching.

3. Joint planning and development activities were conducted as a part of an interdisciplinary development effort. Participating faculty felt good about the interdisciplinary accomplishments.

4. The project did not provide the resources for rigorously measuring the impact on student performance, interest, motivation and retention. Project staff undertook efforts to obtain evidence through proximate measures. These measures provided favorable evidence that student impact objectives were being accomplished, although the data were not rigorously defendable.

5. Faculty said they intended to continue to use the material developed in this project thus providing a basis for a continuing yield on the investment in the future.

6. Based on the records reviewed and interviews with project staff, we concluded that the project was well managed. The delay in the first year of the project and the delay in acquiring video equipment while aggravating, did not appear to have a permanent negative effect on the project. This was because of the otherwise good management and accelerated activity to make up for lost time. (Woltz & Associates, Inc., pp. 17-18.)

C. Forecast

It was the hope of the project staff that this project would continue to function after the extension expired. We have now received most of the videocassettes and films that project participants selected for purchase. The task of developing new student study guides has already begun. The study guides for

"Cognitive Development" (Psychology 201), and "Memory" (Psychology 201) were begun and completed after the end of the project and used by students in March or April 1982. The development of new PLATO lessons and videocassettes may depend on continued administrative support.

Woltz & Associates, Inc., wrote the following evaluation concerning future project yields:

> One of the questions of concern in a development project such as this one is whether the investment will continue to yield benefits in the future. When this question was posed, we received strong affirmative responses. With the acquisition of skills, social and biological science faculty intend to develop additional PLATO lessons and videocassettes. Faculty also intends to continue to use films, videocassettes and student study guides acquired or developed in this project and audio, visual and technical media in their classroom teaching. Based on stated faculty intentions, we believe that the project will yield benefits over the next several years. (p. 17)

IV. BUDGETARY INFORMATION

The Controller's office of the City Colleges of Chicago is responsible for periodically submitting detailed budgetary reports. The total allocation was $145,336, and the final expenditure was $143,268.14.

Expenditures for personnel amounted to $78,195.54. The original allocation was $79,350. Personnel Costs were as follows:

A. Budgetary Expenditures

	Allocation	Amount Spent
Project Director	$23,000.00	$23,399.73
Project Media Specialist	18,000.00	13,075.56
Project Coordinator	28,000.00	32,385.10
Fringe Benefits	10,350.00	9,335.15
	$79,350.00	$78,195.54

Other costs included travel, supplies, professional and technical services, equipment, consultant, and indirect costs. Expenditures amounted to $67,072.60. The original allocation was $66,552. Other costs were as follows:

	Allocation	Expenditure
Travel	$ 800.00	$ 562.60
Supplies	573.00	7,441.23
Professional & Technical Services	3,500.00	3,627.00
Equipment	45,030.00	40,763.17
Consultant	3,000.00	1,075.00
Indirect Costs	13,083.00	13,603.70
	$66,552.00	$67,072.60

The Supplies line item was increased to represent expenditures for commercially prepared videocassettes and films. The expenditures were as follows:

Item	Company	Date of Receipt	Expenditure
Office Supplies	Kennedy-King	10/79	$ 34.81
9 videocassettes	Roscor	6/80	186.00
Office Supplies	Flax Office Supplies	7/80	34.82
Office Supplies	Publix	12/81	224.77
Commercial video cassette presentations & films	Films Incorporated, Time-Life Video, California Newsreel, University of California Extension Media Center, CRM/McGraw Hill, Indiana University, National Audiovisual Center, Encyclopedia Britannica, Cleveland Museum of Natural History, Coronet Films, International Film Bureau, Karol Media, Sterling Educational Films	1/82	6,960.81
		total	$7,441.21

The Equipment line item was decreased because the project received much of the purchased equipment for a lower price than estimated due to competitive bidding. The expenditures for equipment were as follows:

Item	Company	Date of Receipt	Expenditure
3 used PLATO terminals and accessories	University of Illinois, Urbana	1/80	$16,050.00
Microtome and accessories	Fisher Scientific Co.	4/80	2,318.67
Video equipment including video camera, portable video recorder, 2 TV receivers, 2 video players, portable lighting package, video editor, and 30 blank videocassettes	Polycom Video Systems	6/81	21,011.50
Battery charger pack	Polycom Video	7/81	360.00
20 blank videocassettes	Malelo Camera	10/81	456.00
30 blank videocassettes	Malelo Camera	12/81	567.00
		total	$40,763.17

B. Budget Modification

The budget was modified on several occasions. The modifications are listed below from the most recent one to the earliest one:

1. A transfer of $427 to the Project Director line item from the Media Specialist line item to help cover $1244 salary reimbursement from 1/11/82 to 2/28/82. This was approved by MISIP in a letter of 1/18/82 (incorrectly dated 1/18/81).

2. A no-cost extension from September 1, 1981, to February 28, 1982. This was approved by Joanna Rom, a Grants Officer with the National Science Foundation, in a letter dated 8/13/81, and sent to President Akin. Specific requests made in the no-cost extension request to use unexpended funds in personnel costs, travel, supplies, equipment, and consultant line items to purchase commercial videocassette presentations and

films were approved by MISIP in a letter dated 7/15/81. The extension request also called for the project director, one faculty coordinator, and the media specialist to serve on the project staff 1/4-time during the Fall Semester 1981.

3. A transfer of $1,652.21 to the Faculty Coordinator line item from the Media Specialist line item to help pay for a 3/4 F.T.E. assignment for Margaret Balsley during the Summer Session 1981. This was approved by MISIP in a letter dated 4/20/81.

4. A request to carry over $14,000 in the Faculty Coordinator line item to the third year of the project. This was approved by MISIP in a letter dated 2/20/80.

APPENDIX A: EXTERNAL EVALUATION LETTER

December 28, 1981

Dr. Errol M. Magidson EdD
Director, National Science Foundation Project
Social Science Department
Kennedy-King College
City Colleges of Chicago
6800 South Wentworth Avenue
Chicago, Illinois 60621

Dear Dr. Magidson:

Woltz & Associates, Inc. has completed its performance review of the three year project "Science for the Eighties". We found that the project was essentially a well managed enterprise, used as a vehicle for enriching the availability of audiovisual media for use in classroom teaching. Materials produced were of a commendable quality. Faculty support and intention to use the materials further was expressed by those interviewed. Evidence obtained to measure student impact was suggestive at the most, but it reflected favorable results. We suggest that if evaluation of student impact is desired in future projects that an apriori experimental research design be used, which provides before and after data or an equivalent control.

* * * * * * * * * * *

We appreciate the cordial hospitality extended us by Kennedy-King College and the cooperation of the project staff in completing the review.

Very truly yours,

WOLTZ & ASSOCIATES, INC.

Darrel J. Vorwaller
Principal

DJV:mn

Brookwood Plaza • 199 S. Addison Rd. • Wood Dale, Illinois 60191 • (312) 860-9090

APPENDIX B

EXTERNAL EVALUATION CONCLUSIONS

CONCLUSIONS

The conclusions of this performance review are summarized in the following paragraphs:

1. The multi-media teaching aids promised in this project were developed including acquisition of PLATO, video production and showing equipment; development of PLATO lessons; development of video cassettes; development of student teaching guides; and acquisition of commercial films and video cassettes. The quality of the materials produced was commendable.

2. Workshops and seminars were conducted to develop faculty competency in PLATO lesson writing, video script writing, video production and use of media in the classroom. Faculty indicated their intentions to continue to use media materials to enrich their classroom teaching.

3. Joint planning and development activities were conducted as a part of an interdisciplinary development effort. Participating faculty felt good about the interdisciplinary accomplishments.

4. The project did not provide the resources for rigorously measuring the impact on student performance, interest, motivation and retention. Project staff undertook efforts to obtain evidence through proximate measures. These measures provided favorable evidence that student impact objectives were being accomplished, although the data were not rigorously defendable.

5. Faculty said they intended to continue to use the material developed in this project thus providing a basis for a continuing yield on the investment in the future.

6. Based on the records reviewed and interviews with project staff, we concluded that the project was well managed. The delay in the first year of the project and the delay in acquiring video equipment while aggravating, did not appear to have a permanent negative effect on the project. This was because of the otherwise good management and accelerated activity to make up for lost time.

BEST ... AVAILABLE

APPENDIX C

INSTRUCTOR EVALUATION OF NSF MATERIALS

Dear Instructors:

Thank you for agreeing to use our material in your classes this semester. In order to comply with the evaluation requirements of our NSF project grant, we ask that you kindly answer the following questions concerning your use of the materials. Some of the items below may be completed with one word, a phrase or a sentence. However, please feel free to use as much space for comments as you want or need. All the information you can give will be greatly appreciated.

PLEASE NOTE: Use a separate evaluation form for each different set of materials used.

---

1. Name of the Instructor_____

2. Current Semester_____

3. Audio-visual Material Used (check one):

   A. Plato Lessons
   _____ssstats1
   _____ssstats2
   _____ssstats3
   _____ mneeds (Maslow)
   _____psp (problem-solving process)
   _____other (please specify)
   _____

   B. Films with Handouts
   _____Invitation to Social Psychology
   _____Family of Man: Married Life

   C. Video-cassettes with handouts
   _____Ascent of Man, Part I
   _____Culture: Function and Transmission

4. Number of Classes using this Material_____

5. Name of Classes_____

6. Number of Students Involved_____

7. How did your students use/view this Material?

   During class_____ As homework_____

   Both_____

FOR FILM/VIDEOCASSETTE WITH HANDOUTS USERS ONLY

A. Did you use all the questions on the handout?_____

B. Was every student responsible for answering all assigned questions?_____

If not check the method that was used

1. Students were divided into groups and held responsible for 1, 2 or few questions_____

2. Students were divided into groups and, as a group, were responsible for all assigned questions._____

3. Another method was used_____ (please describe)

_____

C. Was the method you used effective?_____

If not, how would you change it and why?_____

_____

_____

8. On a scale of 1-5, how would you as an instructor rate the overall effectiveness of the material used? (please circle)

1 2 3 4 5

Very Effective Not worth using

Reasons for your rating_____

_____

_____

9. On a scale of 1-5 what are your impressions of the students' overall response to the material used? (please circle)

1 2 3 4 5

Very Positive Neutral Very Negative

Reasons for your rating_____

_____

_____

10. Did you give grades to the students for this work?_____

11. If you gave grades, what was the grade distribution?

# of A's_____ # of C's_____ # of F's_____

# of B's_____ # of D's_____ # of incompletes_____

12. If you have ever used this material before check one or both :

Plato lesson or film/video cassettes without handouts_____

Film/video cassettes with handouts_____

13. If this was the first time, why did you decide to use it this semester?

_____

_____

14. Will you use this material again?_____

If not, why not?_____

_____

Please feel free to make any further comments about the material!!!!!!!!

THANK YOU FOR YOUR COOPERATION

APPENDIX D

Videocassettes and Films Selected by the Social Science Curriculum Committee

Appropriate for use in Social Science 101

1. The Amish: A People of Preservation, 53 min., 1976
2. The First Family, 60 min., (discovery of Australopithecus afarensis, claimed to be the "missing link"), 1981
3. On the Cowboy Trail, Odyssey series, 1981*
4. N! ai, The Story of a !Kung Woman, Odyssey series, 1980 (about the Bushmen of the Kalahari)*
5. Little Injustices: Laura Nader Looks at the Law, Odyssey series, 1981 (compares solving consumer complaints in Mexican and American cultures)*
6. Dadi's Family, Odyssey series, 1981 (joint family life in Indian society)*
7. ACLU vs Moral Majority, 60 min., 1981 (other possibly appropriate films including The Changing Face of Dixie, Kent State: May 1970, and Tilt, are listed under "Appropriate for Use in Social Science 102.)*

Appropriate for use in Social Science 101 or Psychology 201

1. Rock-a-Bye Baby, 30 min., 1971 (mother-child attachment bond)
2. A Touch of Sensitivity, 50 min., (importance of human contact; shows interesting experiments)
3. Prejudice: Causes, Consequences, Cures, 24 min., 1974, film
4. Memory, 30 min., 1980

Appropriate for use in Psychology 201

1. Cognitive Development, 20 min., 1973 (compares Piaget's theory to learning theory), film
2. Psychotherapy, 26 min., 1979
3. Otto: A Study in Abnormal Behavior, 27 min., 1975

* These titles were obtained for the price of a blank cassette (copying rights provided by the producer or distributor)

Appropriate for use in Social Science 102

1. Controlling Interest: The World of the Multinational Corporation, 45 min.
2. Marbury vs Madison, 36 min., 1977
3. Gibbons vs Ogden, 36 min., 1977
4. An Essay on Watergate, 59 min., 1973
5. The Changing Face of Dixie, 25 min., 1978 (social, political, & economic changes in the South), film
6. Kent State: May 1970, 23 min., 1974, film
7. Tilt, 20 min., 1973 (animated allegory of world problems, e.g., population explosion, colonialism, etc., may also be appropriate for Social Science 101), film

Additionally, blank videocassettes were purchased for duplicating appropriate TV presentations, for productions, etc.

APPENDIX E

Videocassettes & Films Selected by the Biology Curriculum Committee

1. Diffusion and Osmosis (2nd Edition), 14 min., videocassette, Encyclopedia Britannica
2. Venereal Disease: The Hidden Epidemic, 23 min., videocassette, Encyclopedia Britannica
3. Phagocytes: The Body's Defenders, videocassette, Sterling Educational Films
4. Man: The Incredible Machine, 28 min., videocassette, Karol Media
5. The Human Body: Digestive System (2nd Edition), 15 1/2 min., film, Coronet Films
6. The Lymphatic System 21FB753, 14 1/2 min., videocassette, International Film Bureau Inc.
7. Ecological Realities-Natural Laws at Work, 13 min., videocassette, University of California Extension Media Center
8. The Human Body: Endocrine System, 15 min., videocassette, Coronet Films
9. The Alcohol Problem: What Do You Think?, 18 min., videocassette, Encyclopedia Britannica
10. Army Ants: A Study in Social Behavior, 19 min., videocassette, Encyclopedia Britannica
11. Cholera, 3 min., film, University of California Extension Media Center
12. Biological Rythyms: Studies in Chronobiology, 22 min., videocassette, Encyclopedia Britannica
13. Sociobiology: The Human Animal (Nova Series, 1977, 57 min., videocassette) (will be obtained for both Biology and Social Science Departments)

APPENDIX F

STUDENT NSF MATERIALS SURVEY

Course and Section _____ Instructor _____

Please circle the number that most closely matches your opinion of the NSF materials (PLATO and/or films and videocassettes with handouts) you used this semester. Your response will help us evaluate and improve these. Thank you.

For Students Who Used PLATO

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1. I enjoyed using PLATO.	1	2	3	4	5
2. I like PLATO because it lets you take part at each step in the lesson.	1	2	3	4	5
3. PLATO was nothing but a baby sitter for the teacher.	1	2	3	4	5
4. The PLATO lessons were too hard.	1	2	3	4	5
5. PLATO allowed me to take more responsibility for my own learning.	1	2	3	4	5
6. The material presented would have been more helpful if given only by lecture.	1	2	3	4	5

For Students Who Used Films/Videocassettes With Handouts

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1. I enjoyed the presentation.	1	2	3	4	5
2. The presentations were nothing but baby sitters for the teacher.	1	2	3	4	5
3. The presentations were too hard.	1	2	3	4	5
4. The handouts were helpful.	1	2	3	4	5
5. The handout questions were too hard.	1	2	3	4	5
6. The material presented would have been more helpful if given only by lecture.	1	2	3	4	5

For All Students Who Used Materials

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1. From having taken this class I am more interested in a science career (e.g. biologist, psychologist, lab technician, nurse, etc.)	1	2	3	4	5

2. Please list what you liked most about the materials (use back of page.)

3. Please list what you disliked most about the materials (use back of page.)

APPENDIX G_1

Social Science Students' Evaluation of Developed Materials, Spring Semester 1980

(N = 180) Questions Regarding PLATO	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1. I enjoyed using PLATO	63%	31%	7%	.9%	1.7%
2. I like PLATO because it lets you take part at each step in the lesson	50%	45%	1.7%	1.7%	1.7%
3. PLATO was nothing but a baby sitter for the teacher	1.7%	1.7%	18%	38%	41%
4. The PLATO lessons were too hard	0%	4%	12%	54%	31%
5. PLATO allowed me to take more responsibility for my own learning	46%	43%	6%	4%	0%
6. The material presented would have been more helpful if given only by lecture	4%	4%	19%	47%	23%
Questions Regarding Other Materials (N = 180)					
1. I enjoyed the presentation	30%	56%	12%	2%	1%
2. The presentations were nothing but babysitters for the teacher	3%	3%	19%	44%	32%
3. The presentations were too hard	3%	4%	12%	61%	20%
4. The handouts were helpful	42%	47%	5%	5%	2%
5. The handout questions were too hard	0%	6%	15%	57%	22%
6. The material presented would have been more helpful if given only by lecture	9%	7%	14%	51%	19%

APPENDIX G_2

Social Science Students' Evaluation of Developed Materials, Spring Semester 1981

Questions Regarding PLATO (N = 112)	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1. I enjoyed using PLATO	58.9%	36.6%	1.8%	2.7%	-
2. I like PLATO because it lets you take part at each step in the lesson	46.4%	47.3%	5.5%	.9%	.9%
3. PLATO was nothing but a babysitter for the teacher	5.4%	3.6%	14.4%	40.5%	36.04%
4. The PLATO lessons were too hard	-	3.6%	9.1%	58.2%	29.1%
5. PLATO allowed me to take more responsibility for my own learning	38.5%	45%	12.8%	3.7%	-
6. The material presented would have been more helpful if given only by lecture	4.5%	9.9%	21.6%	41.4%	22.5%
Questions Regarding Other Presentations (N = 139)					
1. Enjoyed presentation	41.4%	51.1%	6.8%	.8%	-
2. Babysitter	.8%	3.9%	12.3%	53.9%	29.2%
3. Too hard	5.6%	3.2%	11.1%	56.4%	23.8%
4. Handouts helpful	44.5%	49.2%	4.7%	.8%	.8%
5. Handouts too hard	2.3%	5.3%	9.9%	59.5%	22.9%
6. Lectures would be better	2.3%	13.7%	22.1%	36.6%	25.2%

APPENDIX H_1

Biology Students' Evaluation of Developed Materials, Spring Semester 1980

Questions Answered By 101-111 Students (N = 59)	Strongly Agree	Agree	No Opinion	Disagree	Disagree
1. Enjoyed presentation	32.1%	49%	17%	1.9%	0%
2. A babysitter	0%	3.8%	26.4%	47.2%	22.6%
3. Too hard	1.9%	5.8%	26.9%	50%	15.4%
4. Handouts helpful	28.9%	48.1%	19.2%	3.8%	0%
5. Handouts too hard	5.7%	11.3%	28.3%	41.5%	13.2%
6. Lecture would be better	3.7%	1.9%	29.6%	44.4%	20.4%
Questions Answered by 102-112 Students (N = 136)					
1. Enjoyed presentation	34%	52.4%	8.8%	2.4%	2.4%
2. A babysitter	3.2%	12.8%	19.2%	36.8%	28%
3. Too hard	3.3%	5.8%	17.4%	51.2%	22.3%
4. Handouts helpful	33.1%	52.9%	9.1%	4.1%	.8%
5. Handouts too hard	1.7%	10.3%	20.5%	48.7%	18.8%
6. Lecture would be better	4%	12.1%	21.8%	46%	16.1%

APPENDIX H_2

Biology Students' Evaluation of Developed Materials, Spring Semester 1981

Questions Answered By 101-111 Students (N = 55)	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1. Enjoyed presentation	34%	42%	22%	2%	0
2. A babysitter	0	2	23	50	25
3. Too hard	2	2	21	65	10
4. Handouts helpful	42	38	9	4	7
5. Handouts too hard	0	4	27	56	13
6. Lecture would be better	6	8	32	44	10
Questions Answered By 102-112 Students (N = 46)					
1. Enjoyed presentation	27%	55%	16%	2%	0%
2. A babysitter	0	6	19	21	54
3. Too hard	0	6	18	38	38
4. Handouts helpful	37	44	17	2	0
5. Handouts too hard	7	6.7%	17.3%	59	10
6. Lecture would be better	11	9	19	53	8

APPENDIX I

Estimated Number of Students Who Used Materials

Semester	Social Science	Biology	Subtotal
Fall 1978	0	0	0
Spring 1979	0	0	0
Fall 1979	90	40	130
Spring 1980	340	230	570
Fall 1980	440	270	710
Spring 1981	336	260	596
Fall 1981	440	230	670
		Total:	2,676

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